RLC layer below the PDCP layer, one RLC entity receives data packets from several radio bearers at the same time.

[0040] Figure 5b illustrates a situation, in which a PDCP entity receives data packets through one radio bearer from two different applications, A and B. The data flows in the radio bearer are distinguished from each other on the basis of IP header fields before the header field compressor in the PDCP entity, after which the data flows are taken to be compressed. The compressor distinguishes the data flows from each other by defining them separate context identifiers, by means of which the decompressor of the receiver can again distinguish the data flows from each other and decompress them. To illustrate this, Figure 5b shows the compressor entity as two separate boxes, but in practice, there are two compression contexts within the same compression entity. The compressed data flows are, however, transmitted over the same RLC connection.

[0041] Each PDCP entity can use one or more header field compression algorithms or not use any. Several PDCP entities can also use the same algorithm. The radio resource controller RRC negotiates a suitable algorithm for each PDCP entity as well as parameters controlling the algorithm and then advises the selected algorithm and parameters to the PDCP layer through a PDCP-C-SAP point (PDCP Control Service Access Point). The used compression method depends on the network-level protocol type used on the connection, the type being indicated to the radio resource controller when the PDP context is activated.

[0042] In the UMTS system, header field compression of data packets being transmitted and decompression of received data packets are thus done on the convergence protocol layer PDCP. The tasks of the PDCP layer include functions related to improving channel efficiency, which are typically based on different optimization methods, such as utilisation of compression algorithms of data packet header fields. Since today the network-level protocols planned for UMTS are IP protocols, the compression algorithms used are those standardized by IETF (Internet Engineering Task Force). Thus, the ROHC compression method is especially well-suited for the UMTS system. The PDCP layer of the terminal typically supports several header field compression methods so as to allow connection establishment with as many network-level protocol types as possible.

[0043] When applying ROHC to the convergence protocol layer of UMTS, both the transmitting PDCP and the receiving PDCP comprise a compressor-decompressor-pair for compressing the data packets being transmitted and decompressing the received data packets. The convergence protocol layer PDCP provides the compression method ROHC a mechanism for negotiating the length of the context identifier for each radio bearer. In practice, the mechanism is implemented in such a manner that the PDCP layer transmits the messages of the compressor and decompressor on to RRC and the actual negotiation is done by RRC signalling. To be able to utilise the radio resources as efficiently as possible, the length of the context identifier CID is preferably defined as zero for the radio bearer.

[0044] If the length of the context identifier CID defined for the radio bearer is "small", i e zero bytes, and all possible 16 data connections are in use, and if the user of the terminal wants to establish one more simultaneous data flow for a radio bearer having such a definition, a problem situation occurs, since 17 simultaneous data flows cannot be distinguished from each other with a "small" context identifier. Because a new data flow cannot be identified by its own context identifier according to ROHC specifications, a context identifier of an existing data flow will be defined for it. In such a case, two data flows having the same context identifier are transmitted simultaneously, which results in an error situation in the decompressor, because the decompressor can no longer distinguish the data connections from each other. A corresponding problem also arises with any other defined CID length value, when the radio bearer uses the maximum number of data connections defined for the length of the context identifier CID, and the user of the terminal tries to open a new data flow. Transmitting several data flows over a radio interface without header field compression leads to an inoptimal utilisation of radio resources, which is a hindrance to an efficient use of the entire mobile system.

[0045] The problems described above can, however, now be reduced with the procedure of the invention, in which the parameters of the radio bearer are defined in such a manner that at least the number of data packet connection header fields allowed by the length of the defined context identifier can be compressed despite the fact that the number of data packet connections allowed by said context identifier length is exceeded. This way, it is possible to ensure that for instance when the length of the radio bearer

context identifier is set at zero and the user of the terminal wants to establish a 17^{th} simultaneous data flow for the radio bearer, at least the original 16, preferably all 17, data flows can be transmitted using ROHC. Correspondingly, with any other defined CID length value, when the radio bearer uses the maximum number of data connections defined for the length of the context identifier CID, and the user of the terminal tries to open a new data flow, it is possible to ensure that at least a number corresponding to the original number of data connections, preferably all data flows, can be transmitted using ROHC.

[0046] According to a first embodiment of the invention, the definition described above can be performed by means of ROHC so that the ROHC algorithm is defined in such a manner that at least one value, preferably the last one, of the length of the context identifier CID, i.e. CID space, negotiated for each radio bearer is always reserved for an uncompressed data flow. Thus, it is possible to ensure that the data connections already in use can be transmitted compressed and, at the same time, a new data connection can be established without compression. The ROHC algorithm can, for instance, be defined on the basis of the negotiation between the compressor and decompressor in such a manner that if the length of the context identifier field is set to zero, the first 15 data flows are compressed, and if the user of the terminal tries to form a new (16^{th}) data flow, it and any simultaneous data flows formed after it are transmitted uncompressed to the receiver. A CID field is attached to the uncompressed data packets to inform the receiver that their header fields have not been compressed and they should, thus, be directed past the decompressor. It is also possible to reserve for uncompressed data flows several values of the CID space of the context identifier field negotiated for the radio bearer.

[0047] According to a second embodiment of the invention, the convergence protocol layer PDCP monitors the number of data connections and if the number of allowed data connections is exceeded, the PDCP layer informs the radio resources control protocol RRC of this, which then performs radio bearer reconfiguration during which the radio bearer parameters, especially the length of the context identifier, are re-defined so that the header fields of each data flow can be compressed according to ROHC. For instance, if the length of the radio bearer context identifier is set to zero and the PDCP layer detects 17 or more simultaneous data flows, the radio bearer is re-configured, whereby the maximum value of the context identifier field is